
18 High Cup Gill

Theme: Volcanoes and molten rock

Location

18 High Cup Nick, Whin Sill. There is parking in Dufton village. The Nick is a strenuous 12 kilometre return hike [NY 745 262].

Description

Due northeast of Appleby is a huge straight gash in the Pennine escarpment, 2.5 kilometres long, almost a kilometre wide and 200 metres deep.

It's called High Cup Gill but is often known as High Cup Nick. The Gill is a glacial valley, cut during successive ice ages. Around the upper rim is a 30-metre cliff of rock called the Whin Sill (miners named it: whin because it's hard and sill because it's horizontal). The Whin Sill is made of an igneous rock called dolerite and was injected into the older Carboniferous rocks as molten magma around 295 million years ago. It is estimated that the Sill originally had a temperature of 1100°C and took 60 years to cool. The rock contracted as it cooled, forming those characteristic vertical cracks and joints.

The Whin Sill (or Sills as there are several parts to the intrusion) extends over a huge area of northern England, from Bamburgh on the Northumberland coast, to Hadrian's Wall and the moors of Teesdale. With an area of at least 4500 square kilometres, most of it beneath the surface, and an unknown area beneath the North Sea, it is England's biggest intrusion and the original sill of geological science.

Molten rock and glacial erosion are not the only things of geological interest in High Cup Gill. Towards its western end the 350-million-year-old Carboniferous rocks lie directly on 475-million-year-old Ordovician rocks. That 125-million-year gap represents millions of years of erosion and is something geologists call an unconformity; multi-million-year gaps like this are a common feature of rock sequences everywhere. On damp crag faces can be found fir clubmoss and, indicating the basic nature of Whin minerals, mossy saxifrage and hoary whitlow-grass.

Photographs

(Photo 18-1) 18 View west down High Cup Gill.

(Photo 18-2) 18 High Cup Gill.



(Photo 18-1) View west down High Cup Gill.



(Photo 18-2) High Cup Gill.